spreading pipes J_1 and J_2, whereupon the mixed vapours ascend into the rectifying column. In this manner a uniform low temperature is maintained, and therefore no heavy vapours are carried over. The latter accumulate in the lowest partition of the rectifying column, from which they are carried off through the pipe *p* into another small column, in which they are further separated.—F. M.

An Improved Process of Purifying Water and adapting it for Brewing and other purposes, and Apparatus therefor. E. M. Dixon, Glasgow. Eng. Pat. 2112, 1883.

Two methods of purifying water are described in the specification of this invention. One "consists in adding slaked lime to the water and injecting air, then separating the sediment, and subsequently injecting carbonic acid into the water;" the other in "first dissolving in the water slaked lime and injecting air while a high temperature is maintained, then adding hydrochloric acid or sulphuric acid or other suitable reagent, and subsequently injecting carbonic acid, and filtering or decanting."

XIX.—PAPER, PASTEBOARD, Etc.

An Improved Process for Sizing Paper and Textile Fabrics, which is also applicable to the manufacture of Parchment Paper, Leather Boards, etc. C. Weygang, Childs Hill. Eng. Pat. 2251, 1883.

The sizes to be used under this invention are starch and animal glue. With them are to be used various "astringent metallic salts," as sulphate of zinc, sulphate of alumina, and sulphate of magnesia. Various modes of procedure are described. In some of them there is combined with the "sizing" of paper pulp the precipitation among it of "filling" material, such as sulphate of barium.

XXI.—EXPLOSIVES, MATCHES, Etc.

Improvements in the Manufacture of Explosive Compounds. F. W. Gilles, Cöln, Germany. Eng. Pat. 1883, 1883.

The author of this invention proposes to manufacture explosive compounds by treating molasses by a mixture of nitric and sulphuric acids. By one method he mixes 380 grammes of raw molasses, 1,000 grammes of fuming nitric acid, and 2,000 grammes of "concentrated sulphuric acid," and washes the product several times, alternately with cold and then with warm water. "The compact nitro-molasses thus obtained is of either a gray, yellow, or whitish colour, and can be used at once as an explosive material, or it can be added to any absorbent and formed into blasting cartridges. A more powerful explosive in the fluid form is obtained from the molasses, if the same," after having had as much water as possible evaporated off from it, "is brought, by being treated with brown peroxide of lead and sulphide of carbon, or by passing oxygen through the mass, or by addition of oxygen, to a composition corresponding to 30 per cent. carbon, 20 per cent. oxygen, and 50 per cent. water *chemically combined, the mineral components not being*" counted. It is when the molasses contains more than the just stated proportion of oxygen that it is to be treated by peroxide of lead and bisulphide of carbon; when it contains less than that proportion of oxygen it is to be treated by oxygen gas, forced into it under pressure in closed vessels. "In all cases, the proportion of carbon to oxygen should be in the ratio of 3 to 2." When the molasses is treated by peroxide of lead and bisulphide of carbon, these bodies are added to the molasses in open vessels, and the mixture is allowed to ferment, for periods varying, with the temperature, from 24 hours, which are sufficient when the mixture is maintained at a temperature of 70° C., to 28 days," which is the period required when the temperature is below 18° C. The "prepared" molasses is then nitrated as above described for raw molasses. "The fluid nitro-molasses thus obtained when heated slowly boils at between 180° and 200° C., and detonates between 220° and 250° C. It can be mixed with any absorbents, as for instance," kieselgühr. For blasting purposes, the inventor recommends various mixtures of nitro-molasses with sawdust, tan, or bran which has been previously impregnated with nitrate of potash.

Improvements in the Manufacture of Explosive Compounds. E. Turpin, Paris. Eng. Pat. 2139, 1883.

The object of this invention is to manufacture "an explosive compound which acts similarly to ordinary gunpowder, but with about three times greater power, provided the ignition of the charge be effected simply by fire, or which produces powerful explosions even in the open air, similar to those produced by dynamite, if the ignition of the charge be effected by the initial explosion of a suitable detonator, such as one having a priming consisting of a grain of fulminate of mercury." The said explosive compound is formed by mixing together about 80 parts of pulverised chlorate of potash and 20 parts of ordinary coal tar, adding from 1 to 10 per cent., according to the degree of fluidity of the tar used, "of a suitable porous absorbent substance, such as powdered wood charcoal, silica, kieselgühr, randanite, and the like." "If it is desired to increase the sensitiveness of the compound, from 1 to 10 per cent. of permanganate of potash is substituted for from 1 to 10 per cent. of the chlorate of potash;" in the reverse case, for part of the chlorate of potash nitrate of potash is substituted.

XXII.—GENERAL ANALYTICAL CHEMISTRY.

On the Estimation of Carbon in Cast Iron and Steel. G. Zabudsky. Journ. d. russ. phys.-chem. Gesellsch. 1883 (1) 410; and Berl. Ber. 16, 2318.

In place of a solution, the author employs for the decomposition of carboniferous iron a dry mixture of copper sulphate and sodium chloride, which is prepared by the evaporation of 100c.c. of a solution containing 20grms. of each salt. For every gram of finely-divided iron 20grms. of the mixture are taken; enough water is added to form a pasty mass when stirred, and the whole is triturated in a glazed mortar until hard particles are no longer detected under the pestle. The pasty mass is then brought into a glass vessel, the mortar rinsed with a solution of ferric chloride, and the mixture gently warmed, at first alone, and finally with hydrochloric acid. The residue of pure carbon is then transferred to an asbestos filter. The whole operation takes from 2 to 2¼ hours. The combustion of the residue gives perfectly satisfactory results.

S. Y.

New Books.

Bleaching, Dyeing, and Calico Printing. With Formulæ. London: J. and A. Churchill, 11, New Burlington Street. 1884. (One of Churchill's Technological Handbooks.) Edited by Mr. John Gardner.

The book is an octavo volume, bound in cloth, and contains 203 pages and five illustrations. The matter is distributed in four chapters, these being followed by a short appendix. Chap. i., bleaching, 33 pages; Chap. ii., dyeing, 28 pages; Chap. iii., calico printing, 22 pages; chap. iv., dyestuffs, 58 pages; the appendix occupying two pages, and the alphabetical index seven pages. Since in this small work the attempt is made to deal with dyestuffs, as well as their employment in the tinctorial arts, it is scarcely necessary to say the treatment of the subject is very concise. Receipts are proportionately somewhat numerous, and, in the main, the object of the work seems to be to give concise practical rules for bleaching, dyeing, and calico printing, though here and there opinions on certain specific points are given and supported by authoritative evidence, and these opinions will be doubtless of considerable value.

TECHNISCH-CHEMISCHES JAHRBUCH, 1882-1883: Ein Bericht über die Fortschritte auf dem Gebiete der chemischen Technologie von Mitte 1882 bis Mitte 1883. Herausgegeben von Dr. RUDOLF BIEDERMANN. Fünfter Jahrgang. Mit 337 in den Text gedruckten Illustrationen. Berlin: Verlag von Julius Springer, 1884.

AN 8vo volume, bound in cloth, 608 pages and 337 wood engravings, tables of contents at the beginning, and double alphabetical index of names of authors and of subject matter at the end. The price of the work is 12m. (12 shillings). As regards its plan, it is a model of skilful arrangement, and follows, to a considerable extent, the method of the German Patentblatt and Die Chemische Industrie. The contents are arranged in the following order: (A) General literature of statistics. (B) Chemical technology. Metallurgy, pages, 10 to 62; salt and soda, 63 to 73; potassium compounds, 89 to 90; ammonia, 91 to 98; alkaline earths, 101 to 107; alum, 110 to 114; glass, 114 to 125; pottery, 125 to 151; building materials, limes, cements, etc., 151 to 166; explosives, 166 to 184; fuel and gas, 184 to 228; sugar, 228 to 273; starch and starch-sugar, 273 to 286; wine, 286 to 303; beer, 303 to 325; spirits, 325 to 357; fats, oils, soap, etc., 357 to 373; water, 373 to 400; foods, etc., 400 to 436; manures, 436 to 445; tanning, 445 to 456; glue, 456 to 458; dyestuffs, inorganic colours, and pigments, 458 to 462; tar-colours, 462 to 500; textiles, 500 to 504; paper, 504 to 511; photography, etc., 511 to 515; organic acids, 515 to 518; alkaloids, 518 to 525; apparatus, 525 to 546. Review of new books in the period stated, 579 to 597. This Bücherschau (review of new books) is certainly a novel and useful feature in a work of this kind.

Monthly Patent List.

ENGLISH APPLICATIONS.

1883.

5832 N. L. Pouschkareff, Moscow. Improvements in the means and apparatus for lighting by means of hydrocarbon vapour, part of which apparatus is also applicable for storing inflammable liquids generally. December 21

5811 C. D. Abel, London. Improvements in desiccating woods. Communicated by J. A. Koch, Galveston, U.S.A., and W. Herre, Berlin. December 22

5816 T. W. B. Mumford and R. Moody, Victoria Docks. Improvements in apparatus for grinding, crushing, or reducing to powder ores, quartz, or other like substances. December 22

5817 A. P. Price, London. Improvements in recovering and obtaining tin from tinned metallic surfaces. December 22

5819 P. M. Justice, London. Improvements in the manufacture of alkalies and alkaline salts. Communicated by S. G. Thomas, Algiers. December 22

5855 C. D. Abel, London. Improvements in the impregnation of wood and textile fabrics with protective or preservative substances. Communicated by J. A. Koch, Galveston, U.S.A., and W. Herre, Berlin. December 21

5861 G. Hand-Smith, Chelsea. Improvements in sinking or fixing colours, marks, or designs into or on marble, wood, ivory, and other materials, and in apparatus employed therein. December 26

5862 G. Hand-Smith, Chelsea. Improvements in the manufacture of white lead and in apparatus employed therein. December 26

5867 H. Brunner, Widnes. Improvements in the manufacture of baskets, skeleton barrels, or crates for carrying acid carboys or other merchandise requiring a strong but not water-tight casing or package. Communicated by C. Garneri, Paris. December 27

5868 W. Weldon, Burstow. Improvements in and relating to the manufacture of chlorine. December 27

5873 N. McFarlane Henderson, Broxburn. Improvements in obtaining oil and gas from minerals, and in apparatus therefor. December 27

5878 J. Jameson, Newcastle-on-Tyne. Improvements in the preparation of safety paper. December 27

5886 F. C. Glaser, Berlin. Improvements in the process for treating zinc ores. Communicated by G. v. Kramsta'sche Erben and R. Wiester, Kattowitz, Germany. December 28

5891 J. Fordred, Tottenham. Improvements in the manufacture of German or dried yeast, part of which improvements is applicable to the production of vinegar. December 28

5893 J. Imray, London. An improvement in apparatus for evaporating, distilling, or concentrating liquids. Communicated by H. Egells, Berlin. December 28

5903 J. McCulloch, and H. McVicar, Calderbank, N.B. Improvements in obtaining oil and other products from minerals and in apparatus therefor. December 28

5911 G. A. Dick, London. Improvements in the manufacture of metallic alloys or compounds. December 29

5938 E. Morewood, Llanelly. Improvements in coating metal plates. December 31

5951 W. Green, St. Lawrence. Improvements in the treatment of mineral oils in combination with other matters, and producing therefrom soap, candles, and other articles. Dec. 31

5958 C. F. Claus, London. Improvements in obtaining from alkali-waste either free sulphur, or free sulphur and sulphurous acid, or free sulphur and sulphuretted hydrogen. December 31

5959 C. F. Claus, London. Improvements in obtaining sulphur from sulphuretted hydrogen. December 31

5960 C. F. Claus, London. Improvements in the treatment of mixtures of sulphuretted hydrogen and other gases to obtain the sulphur of their sulphuretted hydrogen as sulphurous acid. December 31

5962 H. J. Haddan, London. An improved process and apparatus for the manufacture of white lead. Communicated by F. Schmoll, Cologne. December 31

5965 G. W. von Nawrocki, Berlin. Improvements in bleaching leather and tanned hides. Communicated by G. Levinstein, Wiesbaden. December 31

5969 R. Baynes and J. Fearnside, jun., and W. P. Thompson, Liverpool. Improvements in the bleaching or purification of petroleum, and of other distillable oils. December 31

5971 C. B. Warner, London. Improvements in the manufacture of artificial bone, ebony, marble, porcelain, and other substances. Partly communicated by Ljubomir Mestaniz, New York. December 31

5979 A. J. Boult, London. Improvements in regenerative coke furnaces. Communicated by the Schlesiche Kohlen und Koks Werke, Gottesberg, Germany. December 31

1884.

16 J. Hanson, Bingley. Improvements in apparatus for extracting ammonia and other impurities from coal gas. January 1

32 H. H. Lake, London. An improved compound for plastering or stucco work. Communicated by H. E. Scales, Newton, U.S.A. January 1

48 J. G. Willans, West Hampstead. Improvements in the manufacture of aluminium. January 1

49 J. G. Willans, West Hampstead. Improvements in obtaining volatile products from coal. January 1

71 J. Armstrong, Clapham. Improvements in the manufacture of beer or other beverages, and extracts or products to be employed in such manufacture, and for similar purposes. January 1

72 A. C. Henderson, London. An improved process for bleaching rags, tissues, and textiles of all kinds, and paper pulp. Communicated by L. de Roussen, Paris. January 1

92 S. C. Dean, Fulham. Purifying sewer gas and mephitic vapour. January 1

93 S. C. Dean, Fulham. Purifying sewage and foul waters. January 1

91 R. Nicholls, Hendon. Improvements in the treatment with sanitary objects of human excreta and other putrescible matter, and in apparatus and means employed in the conversion of the same for manurial purposes. January 1

113 B. C. Molloy, M.P., London. Improvements in amalgamating gold and other metals, and in the apparatus employed therein. January 1

151 J. H. Johnson, London. Improvements in the manufacture of paper. Communicated by J. A. Mayrneis, Paris. January 1

153 R. Stone, London. Improvements in the manufacture of cement, bricks, tiles, and similar articles, which are also applicable for smelting, heating, and burning purposes generally, and in machinery and apparatus for carrying the same into effect. January 1

203 H. R. Snelgrove, Clapham. Improvements in apparatus for purifying and increasing the illuminating power of coal gas. January 1

209 H. J. Haddan, Westminster. A new or improved process for producing assimilable phosphates from phosphoric slags or residues obtained in the manufacture of iron and steel. Communicated by A. W. B. S. van Oldruitenborgh, Liège, Belgium. January 1

221 D. Urquhart, Westminster. Improved means for suspending the corrosive action of acids and acid mixtures, more particularly applicable to the manufacture of disinfecting compounds and polishing powders. January 1

222 Professor A. K. Huntington, London. An improvement in the manufacture of tungstic acid and its compounds. January 1

224 Professor A. K. Huntington and J. Humphrys, London. An improvement in the treatment of scrap zinc for the recovery of zinc and solder. January 1

338 C. M. Pielsticker, Kilburn. Improvements in the production of steel and other metal wire, plates, rods, bars, and